

WHAT IS CLAIMED IS:

1. A projectile with lateral bulging effect for combating armored targets, said projectile consisting of:

a hollow cylindrical open-ended tubularly-shaped casing, said casing having a constant uniform diameter and wall thickness along the axial extent thereof and being constituted of a material selected from the group of materials consisting of ; tungsten heavy metal; tungsten hardened metal; depleted uranium and; high strength steel; a mass consisting of a bulging medium filling the interior of said hollow cylindrical tubularly-shaped casing and constituting an effective active charge, said casing and said bulging medium having an open leading ends terminating in a flat impact surface extending perpendicularly of the longitudinal axis of said casing for impacting a target in surface contact, said bulging medium being selected from the group of materials consisting of glass-fiber reinforced plastic, polyethylene, nylon, aluminum, copper, lead, tantalum, synthetic resin-containing compressed wood and composites constituted of plastics and metal excluding iron and steel and being of a density and strength which is lower than the density and strength of the material of the casing, wherein the material of said casing upon impacting a target is ballistically more effective than the material of the effective active charge, such that upon the projectile impacting against the target, the bulging medium is axially retarded and thereby compressed within a compression zone proximate said leading end of the casing and so as to laterally bulge and impart a radially outward deflection to at least the leading end of the casing penetrating into the target; and further comprising a massive penetrator arranged centrally in the bulging medium.

2. A projectile as defined in claim 1, wherein bridges (20) are selectively partly or entirely located in the bulging medium (1) between the central penetrator (6) and the casing (2).

3. A projectile as defined in claim 1, further comprising bodies (21, 24, 25) partly or entirely embedded, arranged or randomly distributed in the bulging medium (1), wherein the bodies are selectively different or the same, are rod-shaped or are disposed successively behind one another, and are terminal-ballistically or otherwise effective.

4. A projectile as defined in claim 3, wherein bridges (20) are selectively partly or entirely located in the bulging medium (1) between the central penetrator (6) and the casing (2), at least one element selected from the group consisting of bodies (21, 24, 25) embedded in the bulging medium (1) and bridges (2) having pyrophorous properties.

5. A projectile as defined in claim 1, wherein the penetrator (6) is made partly or entirely from a material selected from the group consisting of sintered or pure metal of high density, brittle metal, and steel of high hardness.

6. A projectile as defined in claim 1, wherein the penetrator is provided with a random cross section (27) which is partly or entirely variable over the length.

7. A projectile as defined in claim 1, wherein the penetrator has a hollow chamber (29) either partly or entirely.

8. A projectile as defined in claim 7, wherein the hollow chamber (29) located in the penetrator contains a material for achieving additionally desired effective properties.

9. A projectile as defined in claim 1, wherein the penetrator is provided with a random surface shaping.

10. A projectile as defined in claim 1, wherein the penetrator is made entirely or partly of a pyrophorous material or contains a pyrophorous material.

11. A projectile as defined in claim 1, wherein the penetrator is made of a mixture or mechanical mixture of different materials.

12. A projectile as defined in claim 1, wherein the penetrator is composed of at least two individual penetrators.

13. A projectile as defined in claim 1, wherein centrally there are arranged two or more individual penetrators twice or several times successively behind one another.

14. A projectile as defined in claim 1, wherein said bulging medium (1) as in the form of a material which is substantially terminal-ballistically ineffective; and said casing is an outer body (2) radially encompassing the bulging medium (1) and made from a penetration material which is considerably more terminal-ballistically effective.

15. A projectile as defined in claim 14, wherein the two materials show a considerable difference concerning each respective density.

16. A projectile as defined in claim 14, wherein the bulging medium (1) is made entirely or partly of a material selected from the group consisting of light metal and an alloy thereof, a fibre-reinforced plastic material, a duroplastic or thermoplastic plastic material, an elastomeric material, a dense and dynamically soft metal or a metal compound, and powdery materials.

17. A projectile as defined in claim 14, wherein the bulging medium (1) contains a material with a pyrophorous.

18. A projectile as defined in claim 14, wherein the bulging medium (1) contains a material with an explosive effect.

19. A projectile as defined in claim 14, wherein the bulging medium is made of a mixture from components selected from the group consisting of light metal and its alloy, fibre-reinforced plastic material, a duroplastic or thermoplastic plastic material, elastomeric material, a dense and dynamically soft metal and a metal compound, powdery material, material with pyrophorous effect, and material with explosive effect.

20. A projectile as defined in claim 14, wherein the bulging medium (1) is entirely or partly liquid.

21. A projectile as defined in claim 14, wherein the bulging medium (1) is selectively pressed, injected, cast or introduced of a pressure below atmospheric into the outer body (2).

22. A projectile as defined in claim 14, wherein the bulging medium (1) is made entirely or partly of prefabricated structures.

23. A projectile as defined in claim 14, wherein the bulging medium (1) is made entirely or partly of two or more components which are slid into one another.

24. A projectile as defined in claim 14, wherein the bulging medium (1) is made entirely or partly of two or more components which are arranged successively behind one another.

25. A projectile as defined in claim 14, wherein the bulging medium (1) and the outer body (2) are connected by a thread (15).

26. A projectile as defined in claim 1, wherein the bulging medium (1) and the outer body (2) and, optionally, the central penetrator (6) are connected by gluing or soldering (16, 19).

27. A projectile as defined in claim 1, wherein the bulging medium (1) and the outer body (2) and, selectively, the central penetrator (6) are connected by form-locking.

I 28. A projectile as defined in claim 14, wherein the outer body (2) is made of a material selected from the group consisting of sintered or pure metal of high density, brittle material, and a steel of high hardness.

29. A projectile as defined in claim 14, wherein the outer body (2) allows subprojectiles or splinters to originate in a statistically distributed manner.

30. A projectile as defined in claim 14, wherein the outer body (2) is pre-notched on the inside (22) or outside (23), or is respectively embrittled there by heat treatment.

31. A projectile as defined in claim 14, wherein the outer body is made of a ring of prefabricated individual longitudinal structures which are mechanically joined or glued or soldered together.

32. A projectile as defined in claim 14, wherein the outer body contains entirely or partly segments, or prefabricated subprojectiles or splinters.

33. A projectile as defined in claim 14, wherein the outer body has an inner diameter which is variable over length.

34. A projectile as defined in claim 14, wherein the outer body has an outer diameter which is variable over length.

35. A projectile as defined in claim 14, wherein the outer body has well thicknesses which are variable over length.

36. A projectile as defined in claim 14, wherein the bulging medium is arranged several times radially in a structure with the casings which are terminal-ballistically effective and enclose the respective bulging medium.

37. A projectile as defined in claim 14, wherein the bulging medium is arranged once or several times radially (1, 1i) and once or several times axially (1e, 1f, 1g, 1h) in a terminal-ballistically effective structure.

38. A projectile as defined in claim 14, and further comprising a hollow aerodynamic tip.

39. A projectile as defined in claim 38, wherein the bulging medium is provided with a pocket-like recess on its face side.

40. A projectile as defined in claim 14, and further comprising a massive one-part or multi-part tip.

41. A projectile as defined in claim 40, wherein the tip reaches into the bulging medium of the projectile or war-head.

42. A projectile as defined in claim 14, and further comprising a tip which is filled fully or partly with a bulging medium.

43. The projectile of claim 1 as a spin-stabilized full caliber projectile.

44. The projectile of claim 1 as an aerodynamically stabilized full caliber projectile.

45. The projectile of claim 1 as a spin-stabilized subcaliber discarding sabot projectile.

46. The projectile of claim 1 as an aerodynamically stabilized discarding sabot projectile.

47. The projectile of claim 1 in the form of a hybrid projectile.

48. The projectile of claim 1 in the form of a projectile with combined stabilization.

49. An unguided missile, comprising one or several war-heads according to claim 1.

50. A guided missile, comprising one or several war-heads according to claim 1.
51. A dispenser, such as a container under an aircraft, comprising subprojectiles in the form of effective bodies to be ejected according to claim 1.
52. A distance dispenser such as a self-flying container under an aircraft, comprising subprojectiles in the form of effective bodies to be ejected according to claim 1.
53. A guided or unguided missile in the form of subprojectiles in the form of ejected effective bodies of a larger unit according to claim 1.
54. The projectile as claimed in claim 1, wherein the hollow tubular casing has a length of approximately 40mm, an outer diameter of approximately 6mm and an inner diameter of approximately 3.5mm.
55. The projectile as claimed in claim 1, wherein the bulging medium filling the interior of said casing incorporates pyrophorous additives.
56. The projectile as claimed in claim 55, wherein said pyrophorous additives are selected from the group of materials consisting of cerium and zirconium.